



Billing Code 4310-55-P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R8-ES-2011-0105]

[4500030113]

Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to List the Humboldt Marten as Endangered or Threatened

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of petition finding and initiation of status review.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 90-day finding on a petition to list the Humboldt marten (*Martes americana humboldtensis*) as endangered or threatened and designate critical habitat under the Endangered Species Act of 1973, as amended (Act). Based on our review, we find that the petition presents substantial scientific or commercial

information indicating that listing the Humboldt marten may be warranted. Therefore, with the publication of this notice, we are initiating a review of the status of the Humboldt marten to determine if listing is warranted. To ensure that this status review is comprehensive, we are requesting scientific and commercial data and other information regarding the Humboldt marten. Based on the status review, we will issue a 12-month finding on the petition, which will address whether the petitioned action is warranted, as provided in section 4(b)(3)(B) of the Act.

DATES: To allow us adequate time to conduct this review, we request that we receive information on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. The deadline for submitting an electronic comment using the Federal eRulemaking Portal (see **ADDRESSES** section, below) is 11:59 p.m. Eastern Time on this date. After [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER], you must submit information directly to the Field Office (see **FOR FURTHER INFORMATION CONTACT** section below). Please note that we might not be able to address or incorporate information that we receive after the above requested date.

ADDRESSES: You may submit information by one of the following methods:

(1) *Electronically:* Go to the Federal eRulemaking Portal: <http://www.regulations.gov>.

In the Enter Keyword or ID box, enter Docket No. FWS–R8–ES–2011–0105, which is the docket number for this action. Then click on the Search button. You may submit a comment by clicking on “Send a Comment or Submission.”

(2) *By hard copy:* Submit by U.S. mail or hand-delivery to: Public Comments Processing, Attn: FWS–R8–ES–2011–0105; Division of Policy and Directives Management;

U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, MS 2042-PDM; Arlington, VA 22203.

We will post all information we receive on <http://www.regulations.gov>. This generally means that we will post any personal identifying information you provide us (see the **Request for Information** section below for more details).

FOR FURTHER INFORMATION CONTACT: Nancy J. Finley, Field Supervisor; by mail at Arcata Fish and Wildlife Office, 1655 Heindon Road, Arcata, CA 95521; by telephone at 707-822-7201; or by facsimile at 707-822-8411. If you use a telecommunications device for the deaf (TDD), please call the Federal Information Relay Service (FIRS) at 800-877-8339.

SUPPLEMENTARY INFORMATION:

Request for Information

When we make a finding that a petition presents substantial information indicating that listing a species may be warranted, we are required to promptly review the status of the species (status review). For the status review to be complete and based on the best available scientific and commercial information, we request information on the Humboldt marten from governmental agencies, Native American tribes, the scientific community, industry, and any other interested parties. We seek information on:

- (1) The Humboldt marten's biology, range, and population trends, including:
 - (a) Habitat requirements for feeding, breeding, and sheltering;

- (b) Genetics and taxonomy;
- (c) Historical and current range, including distribution patterns;
- (d) Historical and current population levels, and current and projected trends; and
- (e) Past and ongoing conservation measures for the Humboldt marten, its habitat, or both.

(2) The factors that are the basis for making a listing determination for a species under section 4(a) of the Act (16 U.S.C. 1531 *et seq.*), which are:

- (a) The present or threatened destruction, modification, or curtailment of Humboldt marten habitat or its range;
- (b) Overutilization for commercial, recreational, scientific, or educational purposes;
- (c) Disease or predation;
- (d) The inadequacy of existing regulatory mechanisms; or
- (e) Other natural or manmade factors affecting its continued existence.

If, after the status review, we determine that listing the Humboldt marten is warranted, we will propose critical habitat (see definition in section 3(5)(A) of the Act) under section 4 of the Act, to the maximum extent prudent and determinable at the time we propose to list the species. Therefore, we also request data and information on:

- (1) What may constitute “physical or biological features essential to the conservation of the species,” within the geographical range currently occupied by the species;
- (2) Where these features are currently found;

(3) Whether any of these features may require special management considerations or protection;

(4) Specific areas outside the geographical area occupied by the species that are “essential for the conservation of the species”; and

(5) What, if any, critical habitat you think we should propose for designation if the species is proposed for listing, and why such habitat meets the requirements of section 4 of the Act.

Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include.

Submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, will not be considered to provide the best information to support a determination. Section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or threatened species must be made “solely on the basis of the best scientific and commercial data available.”

You may submit your information concerning this status review by one of the methods listed in the **ADDRESSES** section. If you submit information via <http://www.regulations.gov>, your entire submission—including any personal identifying information—will be posted on the website. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this personal

identifying information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on <http://www.regulations.gov>.

Information and supporting documentation that we received and used in preparing this finding is available for you to review at <http://www.regulations.gov>, or by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Arcata Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT** section, above).

Background

Section 4(b)(3)(A) of the Act requires that we make a finding on whether a petition to list, delist, or reclassify a species presents substantial scientific or commercial information indicating that the petitioned action may be warranted. We are to base this finding on information provided in the petition, supporting information submitted with the petition, and information otherwise available in our files. To the maximum extent practicable, we are to make this finding within 90 days of our receipt of the petition and publish our notice of the finding promptly in the **Federal Register**.

Our standard for substantial scientific or commercial information within the Code of Federal Regulations (CFR) with regard to a 90-day petition finding is “that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted” (50 CFR 424.14(b)). If we find that substantial scientific or commercial information was presented, we are required to promptly conduct a species status

review, which we subsequently summarize in our 12-month finding.

Petition History

On September 28, 2010, we received a petition dated September 28, 2010, from the Center for Biological Diversity (CBD) and the Environmental Protection Information Center (EPIC), requesting that the Humboldt marten (*Martes americana humboldtensis*), a subspecies of the American marten, be listed as endangered or threatened and that critical habitat be designated in accordance with the Act. The document received clearly identified itself as a petition and included the requisite identification information for the petitioners, as required by 50 CFR 424.14(a). In a letter to the petitioners dated October 22, 2010, we responded that we reviewed the information presented in the petition and determined that issuing an emergency regulation temporarily listing the species under section 4(b)(7) of the Act was not warranted. This finding addresses the petition.

Listable Entity Evaluation

Under section 3(16) of the Act, we may consider for listing any species or subspecies of fish, wildlife, or plants, or any distinct population segment of vertebrate fish or wildlife which interbreeds when mature. Such entities are considered eligible for listing under the Act (and are, therefore, referred to as “listable entities”) should they be determined to meet the definition of an endangered or threatened species. The petition states that genetics research indicates that the currently recognized species American marten (*Martes americana*) should be divided into two

species—*M. americana* and *M. caurina* (CBD and EPIC 2010, p. 6). The petition indicates that if marten taxonomy is changed in the near future, the currently recognized subspecies Humboldt marten (*M. americana humboldtensis*) would likely be designated a subspecies of the newly designated species, *M. caurina*, and thus would likely be renamed *M. caurina humboldtensis*. Therefore, the petition requested listing as endangered or threatened one of the following: (1) The currently recognized Humboldt marten subspecies, *M. americana humboldtensis*; or (2) the Humboldt marten subspecies that may be redesignated as *M. caurina humboldtensis*; or (3) the Humboldt marten as a distinct population segment (DPS) of *M. caurina* (CBD and EPIC 2010, pp. 2, 6).

Historically, marten populations in coastal Oregon have not been included within the range of the Humboldt marten (see *Taxonomy and Distribution* section, below). The petition indicates, however, that because recent genetics research indicates that populations of American martens in coastal Oregon (currently *Martes americana caurina*) are more closely related to *Martes americana humboldtensis* in coastal northern California than to *Martes americana caurina* populations in the Cascade Range of Oregon (Slauson *et al.* 2009a, pp. 1339–1340), the petitioned and listable entity should include all marten populations in coastal northern California and coastal Oregon (CBD and EPIC 2010, pp. 7–10).

The standard of review for a 90-day petition finding is “that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted.” We determine that the petition has met the threshold for review in its characterization of currently designated American marten (*M. americana*) populations in coastal

northern California and coastal Oregon as a potential listable entity. In our status review, we will thoroughly review all information relevant to the taxonomic status of Humboldt martens. For the purposes of this 90-day finding, the common name Humboldt marten refers to currently described American marten (*M. americana*) populations in coastal northern California and coastal Oregon, based on the rationale provided in the petition (CBD and EPIC 2010, pp. 2, 6–8, 10) and research by Slauson *et al.* (2009a, pp. 1339–1340).

Species Information

Taxonomy and Distribution

The Humboldt marten (*Martes americana humboldtensis*) is a subspecies of the American marten and was first described by Grinnell and Dixon (1926, p. 411). The Humboldt marten is classified in the mammalian order Carnivora, family Mustelidae (weasels, otters, badgers), and subfamily Mustelinae (martens, fisher, wolverine, weasels). Clarke *et al.* (1987, p. 1) recognized eight subspecies of the American marten; Wilson and Reeder (2005, p. 608) recognized 12 subspecies; and Hall and Kelson (1959, p. 900) and Hall (1981, pp. 981–985) recognized 14 subspecies. Differences between the subspecies are based on morphological and pelage characteristics (Hall and Kelson 1959, p. 900; Hall 1981, pp. 983–984) or cranial characters and fossil history (Clarke *et al.* 1987, p. 1). The Humboldt marten is recognized as a distinct subspecies of the American marten by all of the aforementioned authors.

The American marten occurs throughout northern North America, reaching its southernmost extent in the Sierra Nevada of California and the southern Rocky Mountains of New Mexico (Gibilisco 1994, p. 66). The historical range of the Humboldt marten is based on the catch of licensed trappers in California for the 5-year period 1919–1924 (Grinnell and Dixon 1926, p. 415), and includes coastal northern California, throughout the coast redwood (*Sequoia sempervirens*) zone from the Oregon border south to Sonoma County (Grinnell and Dixon 1926, p. 415; Grinnell 1933, p. 100; Grinnell *et al.* 1937, p. 209). Historically, *M. a. caurina* has been recognized to occur north of the coast redwood zone in western Oregon, Washington, and British Columbia (Bailey 1936, p. 296; Hall 1981, p. 983; Zielinski *et al.* 2001, p. 479).

In northwestern California, the Klamath River separates the historical range of the Humboldt marten from the range of the Sierra Nevada marten (*M. a. sierrae*), which occurs from the Salmon-Trinity Mountains in interior northwestern California, east to the Cascades, and south throughout the Sierra Nevada (Hall 1981, p. 983; Zielinski *et al.* 2001, p. 479). Slauson and Zielinski (2004, p. 62) suggest that the xeric forest types in the river's canyon may act as a physical barrier between these two subspecies.

In 2009, Slauson *et al.* (2009a, p. 1338) compared mitochondrial DNA sequence diversity of martens from extant marten populations within the described ranges of *M. a. humboldtensis*, *M. a. caurina*, and *M. a. sierrae*, with a 1927 museum specimen of *M. a. humboldtensis*. Martens from coastal northern California share a haplotype with the 1927 museum specimen, supporting the hypothesis that the existing population in coastal northern California represents descendants of the historical population of Humboldt martens described by Grinnell and Dixon in 1926

(Slauson *et al.* 2009a, p. 1337). However, this same haplotype also occurs in coastal Oregon populations of *M. a. caurina*, but is absent from the Oregon Cascades population of *M. a. caurina* and from *M. a. sierrae*, indicating that martens of coastal Oregon are genetically more similar to martens from coastal northern California than they are to martens in the Oregon Cascades (Slauson *et al.* 2009a, p. 1340). The results further suggest that the historically defined range boundary between *M. a. humboldtensis* and *M. a. caurina* at the Oregon-California border may not be valid, and that coastal Oregon martens are part of the same taxonomic group as Humboldt martens in coastal northern California (Slauson *et al.* 2009a, p. 1340). Slauson *et al.* (2009a, p. 1340) concluded that, even though the coastal northern California and coastal Oregon marten populations share a common haplotype, due to small sample sizes, additional genetic analyses are necessary to confirm the genetic relationship. Slauson *et al.* (2009a, p. 1337) noted that there are no known contemporary or historical biogeographic barriers to prevent north-south movement of martens between coastal northern California and coastal Oregon. Therefore, a genetic relationship between coastal marten populations in northern California and Oregon would not be unexpected. As described above in *Listable Entity Evaluation*, for the purposes of this 90-day finding, we conclude that substantial information was provided in the petition indicating that *M. americana* populations in coastal northern California and coastal Oregon may constitute a valid listable entity. We will evaluate all relevant information on genetics and taxonomy in our status review.

Population Status

Zielinski and Golightly (1996) reviewed all published and unpublished historical information on the Humboldt marten, and the results of contemporary (1989–1995) field surveys conducted within its historical range, to determine the status of the subspecies in the redwood zone of California (redwoods also occur in adjacent Curry County, Oregon). They concluded that the marten population in the northern Coast Ranges of California significantly declined during the 20th century and that the last verifiable record was 50 years old, suggesting the subspecies was very rare, if not extinct. However, in 1996 and 1997, martens were detected at two survey stations in northwestern California on the Six Rivers National Forest (Zielinski *et al.* 1998, p. 1). These 1996–1997 presence-absence marten surveys were conducted within presumed suitable habitat, throughout the historical range of the Humboldt marten in northwestern California as well as in extreme southern coastal Oregon. Besides the marten detections in northwestern California, martens were also detected at survey stations within 3 of the 19 sample units placed in southern coastal Oregon (Zielinski *et al.* 1998, p. 2). The southern-most Oregon detection is over 50 miles (mi) (80 kilometers (km)) from the nearest California detection. Much of the habitat in this intervening area is suitable for martens, but presumably unoccupied as of the late 1990s.

The coastal northern California marten population rediscovered in 1996 and 1997 is located in the north-central portion of the described range for *M. a. humboldtensis* (Grinnell and Dixon 1926, p. 413; Slauson *et al.* 2009a, p. 1338). Based on results of a 2000–2001 grid-based survey of the single marten population rediscovered in coastal northern California in 1996, Slauson *et al.* (2009b, p. 13) concluded that the entire Humboldt marten population in California likely consists of fewer than 100 individuals. The Humboldt marten appears to have been

extirpated from greater than 95 percent of the range it occupied in California in the early 1900s (Grinnell *et al.* 1937, p. 209), with the single known extant population occupying an estimated area of only 170,000 acres (ac) (68,797 hectares (ha)) (Service 2010, p. 34). Further, the Humboldt marten population in California is estimated to have undergone a 42 percent decline in occupancy between grid-based surveys conducted in 2000–2001 and 2008 (Slauson *et al.* 2009b, p. 10).

Martens in coastal Oregon are currently known from only two disjunct populations—one in central coastal Oregon and one in southern coastal Oregon—both of which are believed to be in decline based mainly on a reduction in the number of martens trapped and anecdotal observations over time (Zielinski *et al.* 2001, p. 478; Slauson and Zielinski 2009, p. 36). No systematic grid-based surveys have been conducted on, nor population estimates made for, the two populations of martens in coastal Oregon. Concerns about the viability of the two known marten populations in coastal Oregon have been expressed (Slauson *et al.* 2009a, p. 1340).

Published literature on the Humboldt marten largely deals with distribution, habitat selection, home range, diet, and genetics. Little is known about Humboldt marten reproductive biology, demographics, disease, or predation. Where data specific to the Humboldt marten are lacking, we present published information for other American marten subspecies, with the supposition that all subspecies of the American marten share certain characteristics and behaviors.

Biology

The American marten has a long, slender body with relatively large rounded ears, short limbs, and bushy tail (Clark *et al.* 1987, p. 1). American martens have triangular faces with muzzles less pointed than those of foxes. The tail constitutes about one-third of the total body length (Powell *et al.* 2003, p. 636). Each well-furred paw includes five toes (Powell *et al.* 2003, p. 636). Total length of American martens is between 19.7 and 26.8 inches (in) (50 and 68 centimeters (cm)) and adults weigh 1.1 to 3.1 pounds (lb) (0.5 to 1.4 kilograms (kg)), depending on sex and subspecies (Buskirk and McDonald 1989, p. 999); males are 20 to 40 percent larger than females (Buskirk and Zielinski 1997, p. 17). The color of the long, silky, dense fur ranges from pale yellowish buff to tawny brown to almost black (Clark *et al.* 1987, p. 1). The color of the head is usually lighter than the body, and the legs and tail are darker (Clark *et al.* 1987, p. 1).

Compared to the Sierra Nevada marten, the other subspecies of American marten that occurs in California, the Humboldt marten is reported to be darker, with a richer golden tone, and to have less orange and yellow in the throat patch, a smaller skull (Grinnell and Dixon 1926, p. 411), and smaller and less crowded premolars and molars (Buskirk and Zielinski 1997, p. 17). Grinnell *et al.* (1937, p. 207) added that the Humboldt marten had “...far less orange-yellow color on the throat and chest, and the usual area of this color is much broken up by coarse spots and marblings of body brown.” Hagmeier (1961, p. 124) describes the Humboldt marten as a very small marten, perhaps the smallest subspecies of American marten.

Sexual maturity for American martens occurs by 1 year of age, but effective breeding may not occur before 2 years of age (Powell *et al.* 2003, p. 638). Mating occurs in July or August

and the gestation period varies from 220 to 276 days (Strickland *et al.* 1982, p. 602). Birth occurs in late March or April, due to delayed implantation in which the embryos remain in a state of arrested development (Strickland *et al.* 1982, p. 602). Kits are completely dependent at birth and weaned at about 42 days (Buskirk and Ruggiero 1994, p. 17). The male apparently takes no part in rearing the young, which disperse in late summer or autumn (Strickland *et al.* 1982, p. 603). American martens produce an average of slightly less than three young per female with one litter per year (Strickland *et al.* 1982, p. 602). For a mammal of their size, American martens have relatively low reproductive rates, but are long-lived (up to 15 years in captivity and 14.5 years in the wild) (Strickland and Douglas 1987, p. 535), suggesting a relatively slow potential recovery rate from population-level impacts (Buskirk and Ruggiero 1994, p. 16).

Slauson and Zielinski (2007a, p. 55) characterized the diet of Humboldt martens by scat analysis and found that mammals (in 93 percent of scats) and berries (in 85 percent of scats) were the most frequently occurring items, followed by birds (in 21 percent of scats), insects (in 20 percent of scats), and reptiles (in 7 percent of scats). Sciurid rodents (especially *Tamias* species (spp.)) and Murid voles (*Clethrionomys californicus* and *Arborimus* spp.) were the most common mammal species found in Humboldt marten scats (Slauson and Zielinski 2007a, p. 55). The frequency of berries in the diet of the Humboldt marten was the highest reported in diet studies of the American marten; the frequency of birds was also among the highest reported (Slauson and Zielinski 2007a, p. 55).

Strickland *et al.* (1982, p. 607) summarized reports of American martens being preyed upon by coyotes (*Canis latrans*), fishers (*Martes pennanti*), red foxes (*Vulpes vulpes*), cougars

(*Puma concolor*), eagles (*Aquila chrysaetos* and *Haliaeetus leucocephalus*), and great horned owls (*Bubo virginianus*). Bull and Heater (2001, p. 3), in their northeastern Oregon study area, documented 18 American martens killed by predators: 8 by bobcats (*Lynx rufus*), 4 by raptors, 4 by other American martens, and 2 by coyotes.

Slauson and Zielinski (2006, p. 65) estimated seasonal (summer-fall) home range size for Humboldt martens in California using the 100 percent minimum convex polygon method (a polygon created by drawing a line connecting the outer locations). Adult male home ranges averaged 1,322 ac (535 ha); the home range for a single adult female with one kit was 315 ac (127 ha). Juvenile female home ranges averaged 1,491 ac (603 ha); the single juvenile male home range was 453 ac (183 ha).

Habitat

Historical records of the distribution of Humboldt martens in California suggest that the subspecies was closely tied to coastal old-growth redwood forests (Slauson *et al.* 2003, p. 3). However, the one known remnant Humboldt marten population in California occurs in the north-central portion of the described range in an area dominated by Douglas-fir (*Pseudotsuga menziesii*) and tanoak (*Lithocarpus densiflora*) forest associations (Slauson *et al.* 2007, p. 459). This population uses two structurally distinct, fog-influenced forest types, one on serpentine (a mineral or rock consisting of a hydrous magnesium silicate and usually having a dull green color and often a mottled appearance) soils and one on more productive non-serpentine soils (Slauson 2003, p. 59; Slauson *et al.* 2009b, p. 3). The non-serpentine habitats contain old-growth Douglas-fir forests, and the serpentine types contain mixed conifer forests that include Douglas-fir, sugar

pine (*Pinus lambertiana*), western white pine (*P. monticola*), and lodgepole pine (*P. contorta*) (Slauson *et al.* 2009b, p. 3).

At the home range scale, Humboldt martens in California select the largest available patch sizes of old-growth, old-growth and late-mature (*i.e.*, late-successional), and serpentine habitat (Slauson *et al.* 2007, p. 466). Slauson *et al.* (2009b, p. 12) found that the biggest difference between sites in California with stable Humboldt marten occupancy versus unstable occupancy is patch size of old-growth forest, with sites with more stable Humboldt marten occupancy associated with larger patches of old-growth forest. The probability that a Humboldt marten is detected increases as the following home range characteristics increase in size: largest contiguous patch of late-successional forest; total amount of late-successional forest; and total area of serpentine habitat (Slauson 2003, p. 67). In non-serpentine habitats, conifer-dominated, late-successional stands with dense shrub cover in patches greater than or equal to 445 ac (180 ha) are estimated to be a minimum criterion to identify potential Humboldt marten home range areas (Slauson 2003, p. 70).

Compared to martens in the Sierra Nevada and Cascade mountains, Humboldt martens occupy low-elevation areas with little or no snowfall and select forest habitats with some distinctly different features, such as dense, extensive shrub cover (Slauson *et al.* 2009b, p. 3). Serpentine habitats occupied by Humboldt martens have open tree canopies, dense shrub cover, and an abundance of boulder piles, while non-serpentine sites have closed, multi-layered tree canopies, dense shrub cover, and older age-class stands (Slauson 2003, p. 59). Serpentine sites sometimes lack trees, suggesting that dense shrub layers may provide the necessary overhead

cover (Slauson 2003, pp. 60–61). In addition, prey species, such as chipmunks (*Tamias* spp.) and golden-mantled ground squirrels (*Spermophilus lateralis*), may use boulder-sized surface rocks for escape cover in serpentine sites where trees are sparse (Slauson 2003, p. 61). Recent Humboldt marten population monitoring suggests that serpentine areas may represent lower quality habitat than late-successional Douglas-fir forest (Slauson *et al.* 2009b, p. 12). In non-serpentine habitats, Humboldt martens use old-growth stands much more than expected based on availability, use late-mature stands commensurate with availability, and make little or no use of all other seral stages (Slauson *et al.* 2007, p. 462). All earlier seral stages are selected against, probably because of the lack of one or more key structural features (Slauson 2003, p. 62). Dense shrub cover is the most consistent habitat feature at sites selected by Humboldt martens in both serpentine and non-serpentine habitats (Slauson *et al.* 2007, p. 465). Humboldt martens show the strongest selection for conifer stands with greater than 80 percent shrub cover and select against stands with less than 60 percent shrub cover (Slauson and Zielinski 2007b, p. 242). Plant species dominating the shrub layers are shade-tolerant, long-lived, mast- and berry-producing species, including salal (*Gaultheria shallon*), evergreen huckleberry (*Vaccinium ovatum*), Pacific rhododendron (*Rhododendron macrophyllum*), and shrub oaks (huckleberry oak (*Quercus vaccinifolia*) and bush tanoak (*Lithocarpus densiflorus* var. *echinoides*)) (Slauson and Zielinski 2009, p. 42). In contrast, Humboldt martens do not use disturbance-associated species of shrubs, such as *Ceanothus* spp. (Slauson and Zielinski 2009, p. 42). Dense stands of mature shrubs provide refuge from predators, cover for prey species, and mast (berries and acorns) for prey species and Humboldt martens, and such stands may also deter larger-bodied competitors, such as fisher and gray fox (*Urocyon cinereoargenteus*), by limiting their foraging abilities (Slauson

and Zielinski 2009, p. 42). Shrubs also contribute to the formation of some resting locations and resting structures (Slauson and Zielinski 2009, p. 42).

During the late summer and fall, Humboldt martens in California used cavities, den chambers, and broken tops of standing dead trees for 87 percent of their resting locations, and branch platforms, ground sites, and basal hollows for the remainder of their resting locations (Slauson and Zielinski 2009, p. 39). Large snags were the most frequently used resting structure with mean diameter-at-breast-height (dbh) for conifers of 36.6 in (93 cm) (Slauson and Zielinski 2009, p. 40). Conifer logs used as resting structures had a mean diameter of 29.5 in (75 cm) (Slauson and Zielinski 2009, p. 40). Forty-two percent of the resting structures used in serpentine habitats were located in rock and shrub clumps (Slauson and Zielinski 2009, p. 40). All resting sites in serpentine and non-serpentine habitats had dense shrub cover (Slauson and Zielinski 2009, p. 42).

Availability of denning habitat is essential to successful recruitment and persistence of American marten populations (Ruggiero *et al.* 1998, p. 663). American marten natal dens, used by mothers and neonatal young, are typically located in cavities in very large logs, snags, or live trees, while maternal dens, used by mothers and older but still dependent young, tend to be in less specialized structures similar to resting sites (Ruggiero *et al.* 1998, p. 663). Slauson and Zielinski (2009, p. 40) observed one adult female Humboldt marten with a single kit at three maternal den structures: (1) A 26-in (66-cm) dbh live chinquapin (*Chrysolepis chrysophylla*), (2) the broken top of a 44.5-in (113-cm) dbh live Douglas-fir, and (3) in a 45.3-in (115-cm) dbh Douglas-fir snag.

Evaluation of Information for this Finding

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations at 50 CFR 424 set forth the procedures for adding a species to, or removing a species from, the Federal Lists of Endangered and Threatened Wildlife and Plants. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act:

- (A) The present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) Overutilization for commercial, recreational, scientific, or educational purposes;
- (C) Disease or predation;
- (D) The inadequacy of existing regulatory mechanisms; or
- (E) Other natural or manmade factors affecting its continued existence.

In considering what factors might constitute threats, we must look beyond the mere exposure of the species to the factor to determine whether the species responds to the factor in a way that causes actual impacts to the species. If there is exposure to a factor, but no response, or only a positive response, that factor is not a threat. If there is exposure and the species responds negatively, the factor may be a threat and we then attempt to determine how significant a threat it is. If the threat is significant, it may drive or contribute to the risk of extinction of the species, such that the species may warrant listing as endangered or threatened as those terms are defined by the Act. This does not necessarily require empirical proof of a threat. The combination of exposure and some corroborating evidence of how the species is likely impacted could suffice.

The mere identification of factors that could impact a species negatively may not be sufficient to compel a finding that listing may be warranted. The information must contain evidence sufficient to suggest that these factors may be operative threats that act on the species to the point that the species may meet the definition of endangered or threatened under the Act.

In making this 90-day finding, we evaluated whether information regarding threats to the Humboldt marten, as presented in the petition and in other information available in our files, is substantial, thereby indicating that the petitioned action may be warranted. Our evaluation of this information is presented below.

A. The Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range

The petition states that the primary cause of population decline and extirpation of martens in coastal northern California and coastal Oregon is loss of old-growth coniferous forest habitat due to logging (CBD and EPIC 2010, p. 20). According to the petition, logging threatens Humboldt marten populations because martens require large areas of unfragmented, old-growth forest to survive and because logging reduces the amount of available habitat and key Humboldt marten habitat structural elements, such as large standing and dead conifers, down woody debris, and a dense understory of shade-tolerant shrubs (CBD and EPIC 2010, pp. 20–23).

Zielinski *et al.* (2001, p. 487) postulated that timber harvest in the redwood region was the most plausible reason for the continued absence of Humboldt martens from most of the coastal range of northwestern California. Zielinski *et al.* (2001, p. 487) concluded that because

martens typically are associated with old forests with a diversity of large structural features, it is likely that the intensity of timber harvest, especially on private lands, has reduced the habitat value over much of the coastal northern California region. Large areas of the Humboldt marten's range in California and Oregon are located on private commercial timberlands (Zielinski *et al.* 2001, pp. 478, 484; CBD and EPIC 2010, pp. 23, 32). Most of the areas within the Humboldt marten's range in California and Oregon not located on private lands are located on U.S. Forest Service (Forest Service) lands, but timber harvesting occurs on most of these Forest Service lands (CBD and EPIC 2010, pp. 23, 29–32).

The petition also states that over the long-term, wildfire plays a role in developing the habitat components on which martens depend, but because the Humboldt marten's habitat has been so severely reduced by logging, wildfires are now a threat to the subspecies (CBD and EPIC 2010, p. 24). Slauson and Zielinski (2004, p. 63) reported that, due to the subspecies' critically low population size and restricted range in northwestern California, fire threatens the Humboldt marten with short-term loss and fragmentation of suitable habitat. Fires in 1998 and 2008 burned approximately 28 percent of the range currently occupied by Humboldt marten in northwestern California (Service 2010, p. 19). The Biscuit Fire, one of Oregon's largest fires in recorded history, burned a total area of approximately 500,000 ac (202,343 ha) (Forest Service 2009), part of which overlapped the range of the southernmost population of Humboldt marten in coastal Oregon. Fifty percent of the total burn area burned very hot, with more than 75 percent of the vegetation killed (Forest Service 2009). Post-fire site visits to some of the areas burned in northwestern California in 2008 showed that the dense shrub understory was removed, likely reducing the suitability and increasing fragmentation of these areas for the Humboldt marten

over the short term (Slauson *et al.* 2009b, p. 11). In the cool, moist coastal forests of northern California, fires pose a relatively low risk to the Humboldt marten and its habitat. However, the habitat of the current Humboldt marten population in northwestern California occurs primarily in the relatively warm and dry Douglas-fir-tanoak communities farther inland and at higher elevations and, thus, is more vulnerable to lightning-ignited fires. Further, even low-intensity fires can remove the dense shrub understory that is important to Humboldt martens, reducing habitat quality and increasing fragmentation of suitable habitat.

The petition states that recreational activities, including off-highway vehicles, snowmobiles, dirt bikes, and camping could degrade marten habitat, interfere with marten behavior, and cause martens to shift to less suitable habitat (CBD and EPIC 2010, p. 24). The petition recognizes that threats posed to Humboldt marten populations by recreation are unknown, and that due to the remoteness of Humboldt marten habitat and dense shrub cover preferred by the subspecies, the threat posed by recreation is likely low (CBD and EPIC 2010, p. 25). While certain recreational activities may have localized impacts on marten habitat, information in the petition and in our files does not indicate that recreational activities are having population-level impacts that threaten the Humboldt marten.

Summary for Factor A

In summary, we find that the information provided in the petition, as well as other information readily available in our files, presents substantial scientific or commercial information indicating that the petitioned action may be warranted due to the present or

threatened destruction, modification, or curtailment of the Humboldt marten's habitat or range from timber harvesting and fire. We will review the possible effects of these threats to Humboldt marten more thoroughly in our status review.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

The petition states that historical trapping was the primary contributor to the decline of martens in California, including the portions of Humboldt, Del Norte, and Siskiyou Counties where the small extant population of the Humboldt marten occurs (CBD and EPIC 2010, p. 25). In 1946, the California Fish and Game Commission closed the marten trapping season in all or parts of Del Norte, Humboldt, Siskiyou, and Trinity Counties due to declining harvests (Twining and Hensley 1947, p. 136). However, Humboldt marten populations in coastal northern California have not recovered, despite decades of protection from trapping (Slauson and Zielinski 2004, p. 61).

While trapping of martens as furbearers in California is no longer legal, the petition states that the threat posed to Humboldt martens by accidental capture and poaching in California is magnified by other threats such as small population size, population isolation, and habitat fragmentation from logging and fire (CBD and EPIC 2010, p. 25). In California, it is legal to trap other mammals that may occur in Humboldt marten habitat, including bobcats and gray fox (California Code of Regulations, Title 14, Sections 461 and 478), and Humboldt martens may be captured incidentally in traps set for these species. Body-gripping traps (such as steel-jawed leghold, padded leghold, conibear, and snares) were banned in California in 1998 (California

Fish and Game Code Section 3003.1). Only non-body-gripping traps, such as cage and box live traps, are legal in California. No information was provided in the petition, nor is any information available in our files, to determine the extent of incidental trapping-related injury or mortality from non-body-gripping traps. However, the use of box or cage live traps suggests that, if trapped, Humboldt martens are more likely to be released alive and unharmed than if body-gripping or other lethal trap types were allowed. Due to the remote location of habitat occupied by the Humboldt marten and the above restrictions, current mortalities and injuries from incidental capture of Humboldt martens in northwestern California are likely rare.

Additionally, current scientific survey techniques use nonlethal methods, such as track-plates, camera stations, and live traps, and are thus not likely to result in population-level impacts to the Humboldt marten. While injury from accidental capture and poaching may affect individual Humboldt martens in California, neither information in the petition nor information in our files indicates that accidental capture and poaching in California are likely to have a population-level effect or threaten the Humboldt marten.

Martens are still legally trapped as furbearers in Oregon, and the petition states that trapping remains a threat to martens in coastal Oregon (CBD and EPIC 2010, p. 25). The petition states that the threat posed to Humboldt martens by legal trapping in Oregon is magnified by other threats such as small population size, population isolation, and habitat fragmentation from logging and fire (CBD and EPIC 2010, p. 25). Information in the petition indicates that martens can be trapped throughout Oregon between November 1 and January 31 with the purchase of a furtakers' license (CBD and EPIC 2010, p. 25). Although trapping mortality of martens is a

potential concern because marten populations in coastal Oregon are considered small and isolated (see Population Status section), most martens trapped in Oregon are taken from the Cascade Range and Blue Mountains, and trapping harvest of martens in the Oregon Coast Range is rare (Oregon Department of Fish and Wildlife 2010). We therefore conclude that information presented in the petition and available in our files does not indicate that furbearer trapping in Oregon is a threat to Humboldt marten.

Summary for Factor B

In summary, we find that the information provided in the petition, as well as other information readily available in our files, does not present substantial scientific or commercial information indicating that the the petitioned action may be warranted due to overutilization. However, we will review the possible effects of furbearer trapping in Oregon on Humboldt marten more thoroughly in our status review.

C. Disease or Predation

Disease

The petition recognizes that disease in the Humboldt marten has not been studied, but states that the Humboldt marten is potentially threatened by disease given the subspecies' extremely small population size (CBD and EPIC 2010, p. 26). Numerous pathogens are known to cause severe disease in mustelids (Brown *et al.* 2008, pp. 5–6), but disease exposure in the

Humboldt marten has not been studied. Strickland *et al.* (1982, p. 607) noted that American martens in their study area in central Ontario, Canada, tested positive for toxoplasmosis, Aleutian disease (a carnivore parvovirus), and leptospirosis; however, none of these was known to be a significant mortality factor. Brown *et al.* (2008) determined rates of pathogen exposure for the congeneric (member of the same genus, *Martes*) fisher in northwestern California on the Hoopa Valley Indian Reservation—located less than 6.2 mi (10 km) south of the nearest Humboldt marten verified detection—and demonstrated that fishers were exposed to several serious pathogens including canine distemper virus, canine parvovirus, and West Nile virus. Of the 15 radio-collared fishers found dead on the Hoopa Valley Indian Reservation during the pathogen study, 2 had been exposed to canine distemper virus and 6 to canine parvovirus (Brown *et al.* 2008, p. 3). Evidence of canine distemper virus infection has been reported in all families of terrestrial carnivores, including the family Mustelidae that includes martens and fishers (Deem *et al.* 2000, p. 441). In fact, mustelids are among the species most susceptible to canine distemper disease (Deem *et al.* 2000, p. 443). For example, black-footed ferrets (*Mustela nigripes*) are highly susceptible to natural canine distemper infection and have a fatality rate close to 100 percent (Bernard *et al.* 1984). Because canine distemper is highly contagious, and viral shedding may follow infection for 60–90 days (Greene and Appel 1990), it is reasonable to assume that infected fishers on the Hoopa Valley Indian Reservation, especially dispersing juveniles, could infect the nearby Humboldt marten population. Even at low exposure rates, canine distemper has the potential to be a threat to one or more of the small extant Humboldt marten populations.

Research cited in the petition and information in our files indicates that fishers located in close proximity to Humboldt marten occurrences in northwestern California have been exposed

to canine distemper, a disease that can be transmitted between different species of carnivores and that can cause high levels of mortality in carnivores, including species within the Mustelidae family. Estimated size of the northwestern California Humboldt marten population is small, so an outbreak of canine distemper or other lethal carnivore disease could have a population-level impact and pose a threat to this population.

Predation

The petition states that predation is a significant threat to the Humboldt marten, especially because the subspecies is highly vulnerable to mortality events and further population decline due to its small population size (CBD and EPIC 2010, p. 25). Timber harvesting practices that result in reduced shrub layers may result in increased vulnerability of Humboldt martens to predation by larger carnivores, such as fishers and gray foxes. Fishers and gray foxes typically occupy forest types where shrub densities are naturally lower and are rarely detected in coastal forest with extensive shrub cover (Slauson and Zielinski 2007b, p. 242). Dense, spatially extensive shrub layers may provide smaller-bodied Humboldt martens an advantage over other larger-bodied carnivores (Slauson *et al.* 2007, p. 466), so that the removal of these layers may put the Humboldt marten at risk of increased predation. Although there may be associations between shrub cover and risk of predation in forests where Humboldt martens occur, we did not find information in the petition or in our files indicating that elevated predation rates may be a threat to the continued existence of Humboldt martens.

The petition states that recreational activities, including off-highway vehicles, dirt bikes,

hiking, and camping, could affect Humboldt marten behavior, possibly exposing the Humboldt marten to increased predation. The petition acknowledges that the level of the threat from these recreational activities is unknown, but likely low due to the remoteness of the currently occupied range of the Humboldt marten. We conclude that information in the petition and information in our files does not support the assertion in the petition that predation is a threat to Humboldt marten.

Summary of Factor C

In summary, we find that the information provided in the petition, as well as other information readily available in our files, presents substantial scientific or commercial information indicating that the petitioned action may be warranted due to disease as a result of the threat posed by canine distemper or other lethal carnivore diseases on Humboldt marten. We will review the possible effects of these threats to Humboldt marten more thoroughly in our status review.

D. The Inadequacy of Existing Regulatory Mechanisms

The petition states that existing regulatory mechanisms do not adequately protect the Humboldt marten on Federal, State, tribal, or private lands (CBD and EPIC 2010, pp. 28–33). The petition further states that martens are still legally trapped in coastal Oregon and that existing regulatory mechanisms are inadequate to protect habitat for the martens in coastal northern California and coastal Oregon (CBD and EPIC 2010, p. 28).

The petition states that large areas of the Humboldt marten's historical range and current range occur on privately owned commercial timberlands where existing regulatory mechanisms do not protect Humboldt martens from habitat loss and degradation due to timber harvesting (CBD and EPIC 2010, p. 29). As mentioned in the Factor A section above, large areas of the Humboldt marten's current range in coastal northern California and coastal Oregon occur on private commercial timberland. Information in our files supports the assertion that forest management practices on these private commercial timberlands may not be compatible with habitat management for martens (see Factor A; Zielinski *et al.* 2001, pp. 483–488).

The petition also states that existing regulatory mechanisms on Federal Forest Service lands are not adequate to protect Humboldt martens from habitat loss and degradation due to timber harvesting (CBD and EPIC 2010, pp. 28–29). The petition acknowledges that the American marten is recognized as a Forest Service sensitive species in California, but not in Oregon (CBD and EPIC 2010, p. 29); however, the petition goes on to state that the sensitive species status in California does not provide nondiscretionary protections and thus is not considered an adequate regulatory mechanism (CBD and EPIC 2010, p. 29). The petition also states that large areas of the Humboldt marten's current range on Forest Service lands are designated as matrix lands under the Northwest Forest Plan (NWFP), and that timber harvesting that may be incompatible with Humboldt marten habitat management is allowed on matrix lands (CBD and EPIC 2010, pp. 29–30). The NWFP was adopted in 1994 to guide the management of 37,500 sq mi (97,125 sq km) of Federal lands in portions of western Washington and Oregon, and northwestern California. Implementation of the NWFP was intended to provide, over time, a network of large blocks of late-successional forest habitat connected by riparian reserves.

However, even with NWFP implementation, timber harvest, fuels reduction projects, and road construction may continue to result in the loss and fragmentation of occupied and suitable but unoccupied Humboldt marten habitat throughout a substantial portion of its range in coastal Oregon and northwestern California. Protections for late-successional forest habitats provided for species such as the northern spotted owl (*Strix occidentalis caurina*) and marbled murrelet (*Brachyramphus marmoratus*), which are listed as threatened under the Act, provide certain protections for marten habitat but may not provide sufficient protections for certain habitat elements known to be important for Humboldt martens, such as shade-tolerant shrub cover.

Summary of Factor D

In summary, we find that the information provided in the petition, as well as other information readily available in our files, presents substantial scientific or commercial information indicating that the petitioned action may be warranted due to the inadequacy of existing regulatory mechanisms that address habitat threats associated with timber harvesting and forest management. We will review the possible effects of these threats on Humboldt marten more thoroughly in our status review.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

The petition states that several other factors threaten the continued existence of the Humboldt marten, including small population size effects; mortality from vehicle strikes, poisoning, and starvation; and global climate change (CBD and EPIC 2010, pp. 27–28).

The petition states that widespread timber harvesting has resulted in drastically reduced suitable habitat for Humboldt marten, and that existing populations in California and coastal Oregon are small and isolated (CBD and EPIC 2010, p. 27). The smaller a population becomes, the more susceptible it is to stochastic (random) demographic and environmental variation and to genetic factors that tend to reduce population size even more and that may push the population to extinction (Primack 1993, p. 274). Primack (1993, p. 335) found that population size was the best predictor of extinction probability. Slauson *et al.* (2009b, p. 5) used multi-season occupancy modeling to estimate the probability of extinction and colonization (probability that Humboldt martens in northwestern California would reoccupy currently unoccupied suitable habitat) and found that the probability of extinction was higher than the probability of colonization (Slauson *et al.* 2009b, p. 10). As mentioned in the *Species Information* section, for a mammal of its size, American martens—and presumably Humboldt martens—have a relatively low reproductive rate, suggesting a slow recovery from population-level impacts. Species with low rates of population increase are often unable to rebuild their populations fast enough to avoid extinction following habitat loss (Primack 1993, p. 102). As mentioned in the Population Status section, it is estimated that the extant Humboldt marten population in coastal northern California contains fewer than 100 individuals and is believed to be declining, and the two coastal Oregon populations are also considered to be small and in decline. Information in our files supports the assertion in the petition that current Humboldt marten populations in coastal northern California and coastal Oregon are vulnerable to extinction processes due to small and isolated populations (Slauson *et al.* 2007, p. 458; Slauson *et al.* 2009b, p. 13).

The petition states that the Humboldt marten is threatened by several sources of mortality including vehicle strikes, poisoning, and starvation (CBD and EPIC 2010, p. 28). Zielinski *et al.* (2001, p. 484) noted that 10 marten road kills had been reported from coastal central Oregon between 1980 and 1998, while no marten road kills had been reported in coastal California. We acknowledge that Humboldt martens are occasionally killed by vehicles along highways, but we do not consider the numbers reported by Zielinski *et al.* (2001, p. 484) to be sufficiently great to threaten the continued existence of the Humboldt marten, nor do we have information in our files indicating that mortality from vehicle collisions threatens martens in coastal northern California and coastal Oregon. The petition also states that martens are vulnerable to mortality from starvation and poisoning, although the petition acknowledges that the extent of the threat of these factors to the Humboldt marten has not been quantified (CBD and EPIC 2010, p. 28). We conclude that information in the petition and in our files does not indicate that mortality from poisoning or starvation threatens the continued existence of martens in coastal northern California and coastal Oregon. However, we will evaluate these potential threats more thoroughly in our 12-month finding.

The petition further states that global climate change threatens the Humboldt marten (CBD and EPIC 2010, p. 28). According to the petition, vegetation changes resulting from climate change could cause changes in the type and availability of prey for martens and could affect availability of resting and denning sites, shrub cover, and canopy cover. The petition also states that climate change could lead to tree mortality from insect infestation, disease, and drought. While we acknowledge that climate change will result in a variety of environmental changes including changes in vegetation composition and structure, information presented in the

petition is too general and speculative to determine whether climate change effects may threaten the continued existence of the Humboldt marten, and we do not have specific information available in our files indicating that climate change threatens the continued existence of the Humboldt marten.

Summary of Factor E

In summary, we find that the information provided in the petition, as well as other information readily available in our files, presents substantial scientific or commercial information indicating that the petitioned action may be warranted due to other natural or manmade factors affecting its continued existence, specifically small population effects. We will review threats posed by small population effects more thoroughly during our status review.

Finding

On the basis of our determination under section 4(b)(3)(A) of the Act, we determine that the petition presents substantial scientific or commercial information indicating that listing the Humboldt marten throughout all or a significant portion of its range may be warranted. This finding is based on substantial information provided in the petition and in our files for Factor A, Factor C, Factor D, and Factor E. We determine that the information provided under Factor B is not substantial.

Because we have found that the petition presents substantial information indicating that

listing the Humboldt marten may be warranted, we are initiating a status review to determine whether listing the Humboldt marten under the Act is warranted. Because ongoing genetics research may result in changes to American marten taxonomy, we will examine whether the purported subspecific designation of Humboldt marten is appropriate during our status review. If the Humboldt marten does not maintain its status as a subspecies, we will examine during our status review whether the Humboldt marten meets criteria for designation as a distinct population segment under our February 7, 1996, DPS policy (61 FR 4722).

The “substantial information” standard for a 90-day finding differs from the Act’s “best scientific and commercial data” standard that applies to a status review to determine whether a petitioned action is warranted. A 90-day finding does not constitute a status review under the Act. In a 12-month finding, we will determine whether a petitioned action is warranted after we have completed a thorough status review of the species, which is conducted following a substantial 90-day finding. Because the Act’s standards for 90-day and 12-month findings are different, as described above, a substantial 90-day finding does not mean that the 12-month finding will result in a warranted finding.

References Cited

A complete list of references cited is available on the Internet at <http://www.regulations.gov> and upon request from the Arcata Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT** section).

Authors

The primary authors of this document are the staff members of the Arcata Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT** section).

Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Date: December 30, 2011

Rowan W. Gould

Acting Director, U.S. Fish and Wildlife Service

~~{Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to List the Humboldt Marten as Endangered or Threatened}~~

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